INDIANA HARBOR AND CANAL MAINTENANCE DREDGING AND DISPOSAL ACTIVITIES – DESIGN DOCUMENTATION REPORT

HTRW EVALUATION

APPENDIX I

The U.S. Army Corps of Engineers (USACE) issued a two-volume Comprehensive Management Plan (CMP) in January 1999 for the Indiana Harbor and Canal project. Volume 2 (dated September 1998) contained an hazardous, toxic, and radioactive waste (HTRW) evaluation. The U.S. Environmental Protection Agency (Dave Petrovsky), Indiana Department of Environmental Management (Steve West) and East Chicago Waterway Management District (Adriane Esparza) were contacted in June, 1999, to determine if any changes had occurred or new regulatory issues been identified at the ECI site since the CMP. No changes or new issues were identified.

The HTRW evaluation, which was Appendix R in the CMP, is included in this appendix of the Design Documentation Report in its entirety. Since the CMP was issued, several places in the appendix need to be updated:

- 1) The Indiana Department of Environmental Management instead of the U.S. Environmental Protection Agency (as stated on page I-2) has primary Corrective Action authority under the Resource Conservation and Recovery Act.
- 2) At the time the appendix was written, two contractors were to perform future site investigations and make the results available to USACE. On pages I-3 and I-11, it was stated that Geraghty & Miller (G&M) and ERM, respectively, were to conduct site investigations as consultants to the Atlantic Richfield Company. Geraghty & Miller's report consisted of an evaluation of the hydraulic interaction of the Canal and shallow groundwater. Because the report did not include any soil or groundwater analytical results, it has not been included in the HTRW appendix. Pertinent site investigation data from the ERM investigation was summarized and is included as Attachment I-1 to the appendix. A reference was also made in the appendix to a report written by Ecology & Environment, Inc. This 1991 report preceded the site investigations done by G&M and ERM and did not have new information on the site. The information in the above reports do not impact the conclusions of the HTRW evaluation.
- 3) In 1995, USACE collected groundwater samples from eight monitoring wells located in the 4 corners and center of the site. The purpose of the sampling event was to analyze the groundwater for the parameters that have pre-treatment requirements for the East Chicago District's (ECSD) Wastewater Treatment plant. The samples were analyzed for volatiles using method 8260; semi-volatiles using SW-846 method 8270; PCBs using SW-846 method 8080; various metals and other parameters. The metals analyzed were cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc using SW-846 method 6010 and mercury using SW-846 method 7470. The other parameters analyzed were: ammonia-nitrogen (EPA method 350.1); cyanide (EPA method 335.3); fluoride (EPA method 340.2); phosphorus (EPA method 365.2); oil and grease (EPA method 413.1); phenolics (EPA method 310.1); suspended solids (EPA method 160.2), and dissolved solids (EPA method 160.1). At that time the hydrocarbon thickness was 3 feet in the center of the site, decreasing to less than a foot by the

canal. The other five wells measured had no hydrocarbon layer. Prior to this time, the highest measurement of the hydrocarbon thickness on the site was 7.8 feet. The analytical results were compared to ECSD's pretreatment limits as shown in Attachment I-2. The concentrations of the samples were below the pretreatment discharge limitations for all parameters except two. The sample from MW-5 exceeded the benzene limitation and the sample from MW-1 exceeded the oil & grease limitation. No volatile or semi-volatile chorinated compounds or PCBs were detected. None of this data impacts the conclusions of the HTRW evaluation.

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1. AUTHORITY

The Water Resources Policies and Authorities ER 1165-2-132, Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works projects, requires that a site investigation be conducted as early as possible to identify and evaluate potential HTRW problems. This report documents the work performed during preparation of the Environmental Impact Statement for the construction of a Confined Disposal Facility (CDF) to be used for dredge material from Indiana Harbor and Indiana Harbor Canal, Indiana.

2. APPROACH

The purpose of this investigation was to evaluate the extent of HTRW at the ECI site in East Chicago, Indiana and to determine what impacts known HTRW materials will have on construction and operation of a CDF at that site. This assessment relied primarily on coordination with the U.S. Environmental Protection Agency (USEPA), the Indiana Department of Environmental Management (IDEM), the City of East Chicago and site characterization data obtained by Geraghty & Miller, Inc., a consultant for ARCO, Inc. Additional information was obtained from the USEPA Facilities Index System Database (FINDS).

3. PROJECT DESCRIPTION

The ECI site had been owned and operated for 60 years by Sinclair Oil Company, Inc. Sinclair sold the site in 1968, prior to enactment of the Resource Conservation and Recovery Act (RCRA), to Atlantic Richfield Company (ARCO). ARCO operated the site for 8 years and sold the site in 1976 to Energy Cooperative, Inc. (ECI). notified the USEPA, Region V on July 1, 1980 of hazardous waste activity on the site. ECI submitted a Part A application on November 13, 1980 as required by RCRA and acquired RCRA interim status. The Part A application indicated that slop oil emulsion solids from petroleum refining (listed hazardous waste K049) and separator sludge (listed hazardous waste K051) were being stored in tanks and incinerated at the facility. ECI filed for Chapter 11 bankruptcy in 1981. In 1984, U.S. Bankruptcy Court, Northern District of Illinois, Eastern Division, ordered the facility to be closed in an environmentally sound manner.

ECI's contractor razed all above ground structures and identified hazardous wastes for removal. Identified hazardous wastes included 600 cubic yards of API separator sludge (K051) located in an API separator, two tanks containing a total of 2,558 barrels of API separator sludge, two tanks totaling 61 barrels of slop oil emulsion solid (K049), six drums of tetraethyl lead waste, and 7,000 barrels of waste gasoline. In addition to the tanks, storage containers and the incinerator, there were several pits, sumps and spill areas. Pumps were removed from lead pump pits and then the pits were filled. There was no testing of residuals that remained in the pits. Subsequently, the site was graded for drainage and covered with top soil.

Despite these activities, the hazardous waste units were never closed in accordance with the requirements of RCRA (40 CFR Part 265, Subpart G). RCRA requires closure when a hazardous waste treatment, storage or disposal unit ceases operation. Under RCRA closure the site can either be clean closed, meaning contamination is not present or is removed, or closed in place, meaning contaminants are contained in place and monitored. It is anticipated that clean closure would not be feasible for the ECI site.

In addition, as the ECI facility was still seeking a hazardous waste permit after November 8, 1984, the facility is also subject to RCRA corrective action (RCRA Sections 3004 (u) and (v), and 3008 (h)). RCRA corrective action requires remediation as necessary to protect human health and the environment from all releases of hazardous waste and hazardous constituents from solid waste management units at the facility. The RCRA closure and corrective action requirements associated with the portions of the site affected by the CDF proposal have been integrated into the CDF design.

The U.S. EPA and the Indiana Department of Environmental Management (IDEM) share the responsibility for administration and implementation of the RCRA program within the State of Indiana. Both IDEM and U.S. EPA agree that the RCRA closure and corrective action issues associated with the ECI site will need to be addressed. As noted above, IDEM and U.S. EPA have determined that the closure of the hazardous waste units previously housed at the facility and corrective action for the facility portions which would underlie the CDF can be incorporated into the CDF design. The remaining

corrective action requirements for the non-CDF facility parcels at the ECI site would be addressed in the future. Proposals for the closure of RCRA hazardous waste units in the State of Indiana must be approved by IDEM. The implementation of corrective action in the State of Indiana is currently the responsibility of the U.S. EPA.

In 1989 the City of East Chicago foreclosed on the ECI site as payment for back taxes, unaware of the site's RCRA status. Since the City of East Chicago became the owner of the site without having approved corrective action and closure plans in place, the City of East Chicago assumed the RCRA liability and is currently the responsible party. A Phase III Subsurface Characterization performed by ERM, Inc. confirmed the USEPA's speculation that debris and underground storage tanks and pipelines had been left in place. The USEPA anticipates that the contaminants on site will consist mostly of crude oil and refined crude oil due mostly to spillage.

In July 1990, the U.S. Coast Guard reported observation of free product flowing from seeps on the ECI site into the Lake George Branch of the Indiana Harbor Canal. order to contain the flow, the City of East Chicago installed 4 recovery wells in December of 1992. wells were placed adjacent to an existing sheet pile wall located parallel to the Lake George Branch of the Indiana Harbor Canal, from Indianapolis Boulevard to the railroad at the western edge of parcel IIA. An inspection of the sheet pile wall indicated that there may be a break near the center of the wall. The recovery wells were placed at each end of the sheetpile wall, and near the suspected break. Analysis of the recovery water from the wells has identified product from wells placed at the two ends of the sheetpile wall but not from those placed near the middle.

Twice during the 1980's the USEPA, investigated the ECI site and tabulated a score for the site under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). On both occasions the score was not high enough to place the site on the National Priorities List or the State Superfund List, but since scores were tabulated, the site appears on the CERCLIS Database.

ARCO's consultant, Geraghty & Miller, Inc. has conducted a site investigation and in addition to geological data, has collected information on the occurrence and thickness of free phase hydrocarbons at the ECI site. Geraghty & Miller also intends to collect geochemical and geotechnical data from the ECI site, which will be made available to the Corps of Engineers upon receipt.

As noted above, various elements required to complete RCRA closure/corrective actions for the underlying portions of the CDF at the ECI facility have been incorporated into the CDF design and would become integral to the CDF. These include: (1) a slurry wall around the perimeter of ECI Parcels I, IIA and IIB extending from the ground surface down about 33 feet to the stiff clay underlying the site; (2) a clay cap on Parcel I, tied into the slurry wall; (3) a groundwater gradient control system on Parcels I, IIA, and IIB; and (4) installation of an on-site facility for pre-treatment of groundwater collected from Parcels I, IIA, and IIB, if needed. In contrast to Parcel I which would be capped during the initial phase of CDF construction, final closure of the CDF, would also fulfill the capping requirements for the RCRA corrective action of Parcels IIA and IIB.

Parcel I previously housed the RCRA hazardous waste units at the facility. These structures were razed along with the rest of the above ground structures, but were never closed in conformance with the RCRA regulations. the apparent ubiquitous nature of the on-site contamination on this Parcel and in accordance with their regulatory authorities, IDEM determined that closure inplace would be most appropriate for the area which previously housed the hazardous waste units. closure design for Parcel I would include a slurry wall, a gradient control system consisting of ground water extraction wells which would maintain ground water flow into this portion of the CDF and an overlying 3-foot compacted clay cap with a hydraulic conductivity of 10⁻⁷ cm/s. The compacted clay cap would be placed on the existing surface and would overlie Parcel I. The slurry wall would extend approximately 33 feet from the ground surface into an underlying clay till unit. U.S. EPA has determined that construction of these components would also address the corrective action requirements for Parcel I. These RCRA closure and corrective action components have been incorporated into the proposed CDF

design. Once constructed, Parcel I would be subject to the RCRA post-closure care and permitting requirements applicable to hazardous waste units for maintenance and monitoring. Corrective action for the non-CDF portions of the ECI site would be addressed at that time. The post-closure care requirements under RCRA would be integrated into the maintenance and monitoring requirements for the CDF.

The CDF will also overlie facility Parcels IIA and IIB. Unlike Parcel I, these site portions never housed hazardous waste units and are not subject to the RCRA closure requirements. However, these facility portions are subject to the RCRA corrective action requirements, which addresses releases associated with waste handling practices to the environment. Given the apparent widespread presence of contamination associated with these facility parcels, U.S. EPA determined that an acceptable corrective action scenario for these site portions would be similar to the proposed corrective action scenario outlined above for Parcel I. consist of a perimeter slurry wall associated with a hydraulic conductivity of 10^{-7} cm/s tied into the underlying clay unit, and a ground water removal system consisting of ground water extraction wells placed within the interior of the slurry wall. In contrast to the placement of the overlying clay layer for Parcel I providing the final cap for this site portion, final capping of Parcel IIA and IIB would be done during final closure of the CDF. The corrective action components for Parcels IIA and IIB would be incorporated into the CDF design and connected to the closure/corrective action components for Parcel I. The corrective action maintenance and monitoring requirements for these facility parcels would integrated into the maintenance and monitoring requirements of the CDF.

In addition, the facility would also be subject to maintenance and monitoring requirements under the TSCA authorization as the CDF would house the regulated PCB sediments currently within the Project. A subcell within the CDF will be constructed in accordance with the requirements under TSCA for the disposal of the Project sediments associated with PCB concentration equal to or exceeding 50 ppm. These maintenance and monitoring requirements for this subcell under TSCA would also be integrated into the maintenance and monitoring requirements for the CDF.

Final closure design of the CDF and the corrective action unit for Parcels IIA and IIB, would entail the placement of cap. After final closure, maintenance of the CDF will include the removal of any volunteer vegetation which could impact the hydraulic conductivity of the compacted clay liner.

The U.S. Army Corps of Engineers, Chicago District coordinated extensively with the USEPA, Region V and the IDEM in 1992 to develop the plan discussed above to combine the required RCRA closure and corrective actions with construction of a dredged material confined disposal facility on Parcels IIA and IIB of the ECI site. The objective of the discussions was to develop a combined plan that was cost-effective and environmentally sound, met regulatory requirements, and resulted in significant cost savings for Federal interests.

The USEPA and the IDEM indicated that if the proposed CDF were to be constructed on a clean upland site as opposed to an existing contaminated site, such as the ECI site, total hydraulic separation between the CDF and the site would be required. Total hydraulic separation would involve construction of several very costly separation liners and monitoring layers. However, due to widespread nature of the contamination at the ECI site, the closure and the corrective action needs for the underlying portions of the site have been incorporated into the CDF design. Thus the slurry wall and gradient control system would be used to contain both the on-site contamination and the contaminants associated with the Project sediments.

4. SITE VISIT

Ms. Kay Nelson, Project Manager for the East Chicago Sanitary District conducted a site visit in early June 1993 to evaluate the impact of heavy rainfall on the site. Ms. Nelson indicated that there appear to be no new seeps on Parcels IIA and IIB (the proposed project site). Ms. Nelson indicated that the site has become very densely vegetated since the summer of 1992. She reported seeing cottonwood trees and tall grass, making identification of seeps and free phase liquid difficult. Ms. Nelson suspects that the recovery wells are responsible for preventing the development of new seeps on the main parcel. Ms. Nelson visually inspected runoff

from the site that was flowing into storm sewers along Indianapolis Boulevard. Ms. Nelson reported that there was no visible free phase liquid in the runoff and there was no evidence of staining on the concrete surrounding the sewer grates.

U.S. Army Corps of Engineers, Chicago District personnel have not inspected the site recently. Site inspections by U.S. Army Corps of Engineers personnel will be included in future work.

5. DATABASE INFORMATION

U.S. Army Corps of Engineers personnel reviewed the USEPA Facilities Index Database System (FINDS) to identify which sites in the City of East Chicago have been included on the USEPA's Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) and the Resource Conservation and Recovery Information System (RCRIS) databases. This information, shown in Table I-1, is not of particular importance in this case, since it is already known that the proposed site is regulated under RCRA, but the database retrieval does show that the area in which this site is located is heavily industrialized and contains numerous sites listed on the CERCLIS database.



ND Database Ret

NAME (FACILITY)	RCIECON	PCSOWEP,	APPADISOAR	CENTROLER	PTTEMCDBAOTS	DOCUCTABLEM	CICKOTS	STATE	PADMPTS	REMANDEN	TRUKOTS	_	ITREET (FACILITY)	CITY (PACILITY)	STATE (FACILITY)	ZP COOK (FACILITY)	COUNTY (FACELTY)	DAB
A & B REALITY								14					745 EUCLID	EAST CHICAGO		44312	LAKE	DVD984906748
A & B REALITY VACANT		1			1			14					956 CIUTHRIE	EAST CHICAGO	IH	46312	LAKE	DID984906776
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ACTIN INC	01				1								1102 E COLUMBUS DR	EAST CHICAGO	IN	443122845	LAKE	D/D984894811
AMERICAN METAL CLEANING CO	01					1.1		1					4616 PARRISH AVE	EAST CHICAGO	DI	44312	LAKE	DID096466057
AMERICAN RECOVERY CO	01												SOO INDIANAPOLIS BLVD	EAST CHICAGO	DI	44312	MAILION	D/D#G4644833
AMERICAN STEEL FOUNDRIES	01		03					14			17		1761 CANAL ST	EAST CHICAGO	DH		LAKE	D/D643075218
AMOCO OIL CO BOAT DOCKS	01				1	1.1		1					RILEY RD & SHIP CANAL	EAST CHICAGO	DN	46312	LAKE	D/D800717834
AMOCO SERVICE STATION 15669								14					KENNEDY & CHICAGO ST	EAST CHICAGO	DM	46312	LAKE	D/D984987430
AMVAC INC	10							14					1103 E 138TH PL	EAST CHICAGO	DH	463122342	LAKE	D/D984909125
AMVAC INC	01							14					1103 E 138TH PL	EAST CHICAGO	DH	44312	LAKE	DID094743437
APEX STEEL & SUPPLY CO							I	14					3210 WATLING ST	EAST CHICAGO	IN		LAKE	DID984984849
APEX STEEL AND SUPPLY CO								14		T			3210 WATLING ST	EAST CHICAGO	IN	443121716	LAKE	D/D98-4910183
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APEX STEEL AND SUPPLY CO								14				_	3210 WATLING ST	EAST CHICAGO	_	463121716	LAKE	DAD484918573
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ASSOCIATED BOX CORP			03										5300 INDIANAPOLIS BLVD	EAST CHICAGO	IN	46312	LAKE	D(D004509451
ALITO RITE BODY & PAINT CTR	01												DIG CARROLL ST	EAST CHICAGO	DN	-	LAKE	DVD985032523
BADGER PIPELINE CO	01						100						3830 INDIANAPOLIS BLVD	EAST CHICAGO	IN		LAKE	DIDMMM3647
BADGER SUPPLY					1		l et	14					928 E 148TH ST	EAST CHICAGO	M	_	LAKE	DID964913095
BEARING HEADQUARTER CO	01	1			. [14	-					175 W CHICAGO AVE	EAST CHICAGO	IN		LAKE	DID981934343
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BLAW KNOX POUNDRY			03		1	1	1	114	1_	-	1_		4407 RAILROAD	EAST CHICAGO	IM		LAKE	IND964861771
BLAW KNOX FOUNDRY & MILL MACHINERY	01	_	1			07			1_	1	1-		4400 RAILROAD AVE	EAST CHICAGO	IN	-	LAKE	D/D000130311
BODNARS SERVICE STATION		1	1		4	1.		14	1	+	-		1302 W CHICAGO AVE	EAST CHICAGO	IN	-	LAKE	D/D#84936113
BRANDENBURG DEMOLITON SITE		-	1-	-	-	07	1	1		-	1-		2500 CHICAGO AVE	EAST CHICAGO	IN		LAKE	D/D#61100543
BRESLUBE USA	01	-	03	04 05	06	1		14	15	4	1 -		601 RILEY RD	EAST CHICAGO	Di		LAKE	D/D077043034
BUCKEYE PIPE LINE CO	01	-	1	-		-		14		+	1	-	MCSHANE & COLUMBUS DR	EAST CHICAGO	D		LAKE	D/D980792483
BUNCHEKS SERVICE STATION		-	1	-	-	1-		14		+	-	H	772 W 1515T ST	EAST CHICAGO	Di		LAKE	D/D964945931
CALLMET LUMBER INC			1	-	-		-	14	-	-	-	H	402 E CHICAGO AVE	EAST CHICAGO	Di		LAKE	DIDS 1988346
CAROILL STEEL & WIRE	01	-	-		-	-	-	-	-	+	+-	\vdash	3777 CANAL ST	EAST CHICAGO	D		LAKE	DVD150606432
CARTAGE CO		-	-		-	-		14	-	-	-		4600 EUCLID AVE	EAST CHICAGO	Di		LAKE	D/D985031582
CENTRAL SERVICE CO EAST CHICAGO				0:		1_				1	1		Side CLINE AVE	EAST CHICAGO	Di	-	LAKE	D/D980407 449
CERTIFIED CONCRETE INC			03		1	1		14	1	1	-		3866 MICHKIAN AVE	EAST CHICAGO	DH		LAKE	D/D005420014
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CHICAGO FLAME HARDENING CO				01	-	1				1	1	-	5200 RAILROAD AVE	EAST CHICAGO	IN		LAKE	DVD005230438
CTTOO PETROLEUM CORP	01		03	05		1_		14		1			2500 E CHICAGO AVE	EAST CHICAGO	Di		LAKE	D(D005267381
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CLARK SERVICE STATION 0223						1		14					5600 INDIANAPOLIS BLVD	EAST CHICAGO	Di		LAKE	DID984911464
CLIFF ROLAND OPEN DUMP						1		14		L			524 CHICAGO AVE	EAST CHICAGO	IN		LAKE	DID984975045
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EAST CHICAGO SANITARY WASTEWATER DIVISION		101			3 .	07	1 1	-1	4		+-+	5200 INDIANAPOLIS BLVD	EAST CHICAGO	IM	-	LAKE	DYD980500227
EAST CHICAGO WASTE DEPT		-	-			-	1	-1:	- 1	1	1-1	5201 INDIANAPOLIS BLVD	EAST CHICAGO	IM	44312	LAKE	IND984955943
ECI SOUTH TANK FIELD PROCESS			-			1	1 1	1	4		1	400 E CHICAGO AVE	EAST CHICAGO	IM		LAKE	IND961996361
EI DUPOINT DE NEMOURS & CO	01	-					1-1			-	1	3500 INDIANAPOLIS BLVD	EAST CHICAGO	IN	46312	LAKE	DYT190010298
The property accounts as an all the contract of the contract o	01	01	03	04	5	07	1	13 1	14	_	17	3313 KENNEDY AVE	EAST CHICAGO	IN	46312	LAKE	IND005174354
ELLIOTT SUPPORT SERVICES	01	-	-				1	1		-	1	425 W 1515T ST	EAST CHICAGO	IN	44312	LAKE	DVD984892562
ENERGY CO OP INC	01		-	10	3	07	1		14		1	3500 INDIANAPOLIS BLVD	EAST CHICAGO	IN	44312	LAKE	IND082547803
ENERGY SALVAGE ASSOC		1	l	11	1.		1.1	1	4			425 W 152HD ST	EAST CHICAGO	IN	44312	LAKE	IND#84975391
ERNIES BODY SHOP	01		1			1	1 1					3301 GRAND BLVD	EAST CHICAGO	IN	44312	LAKE	DID964874974
FLORES ROSEPH		_				.1		_]ı	4			4145 INDIANAPOLIS BLVD	EAST CHICAGO	IN		LAKE	DVD984995233
CANNON METAL FABRICATING CO			03			1	LI	T				418 W CHICAGO AVE	EAST CHICAGO	IN		LAKE	DVD009841891
GARCIA IORGE						1.	1.1	I	4	1		3494 INDIANAPOLIS BLVD	EAST CHICAGO	DN		LAKE	DID984995191
GENERAL AMERICAN TRANSPORTATIO	01		03	0	5							4520 EUCLID AVE	EAST CHICAGO	DK	-	LAKE	IND000715078
GENERAL AMERICAN TRANSPORTATION	101		03	04 0	5	07	1	T	4			4245 RAILROAD AVE	EAST CHICAGO	IN		LAKE	DVD074429805
OOODYEAR AUTO SERVICE CENTER	01					1	11		4			1705 E COLUMBUS DR	EAST CHICAGO	IN	-	LAKE	DVD067460022
ORAVER ENERGY SYSTEMS INC	01		03		1		11	1	1		1	4809 TODD AVE	EAST CHICAGO	IN	-	LAKE	DID055413710
HARDY & SONS SERVICE STATION					1	1	1 1	Ti	4	1	1	4102 EUCLID AVE	EAST CHICAGO	IN		LAKE	DVD983001932
HARSOO CORP HECKETT PLT II	01	-			A		1	li	4		1	3216 WATLING ST	EAST CHICAGO	IN	and the same of th	LAKE	-
HARSCO CORP HECKETT PLT 7 SITE C	01		03			1	1.1	_	4	1	17	3001 DICKEY RD	EAST CHICAGO	IN		LAKE	IND039061965 IND961782196
HECKETT SLAG AT INLD		-	03		1	1	1 1		-		17	3210 WATLING ST	EAST CHICAGO	IN	and the second second second second second	-	
HODOES LLOYD		1		-	-1	107	11	1	- 1-	-1-	1	4900 N CLINE AVE	EAST CHICAGO	IN	A CONTRACTOR OF THE PARTY OF TH	LAKE	DID964881854
HOOSIER BAILCAR INC	01	1	1	-	1	1	1 1		-		1	1915 KENNEDY AVE	EAST CHICAGO	IN	- Complete C	LAKE	DID980823793
ICEP INC	01	1	1	1	-1-	1	1 1	1	1	-	1-1	1466 WATLING ST	EAST CHICAGO	-		LAKE	DND983007475
INDIANA BELL TELEPHONE CO	01	-	1			1	1 1	1	1		1-1	3301 WATLING	EAST CHICAGO	DN		LAKE	IND961000300
INDIANA BELL TELEPHONE CO	01	-			-1-	1	1-1	1	-1-	1	1	717 E CHICAGO AVE		DN	- Comments in the comments of	LAKE	D/T190014407
INDIANA COACH AND FLEET SVC	01		1	1	-1-	1-	1 1			-	+	1006 CARROLL ST	EAST CHICAGO	DH	-	LAKE	D/T190013219
INDIANA ENVIRONMENTAL TRANS	- 101	-	1-	-	-1-	1-	1 1	-	-	-	1-1	4505 KENNEDY AVE	EAST CHICAGO	DH	Access to the second	LAKE	IND985024525
INDIANA HARBOR WORKS		-	-	-+	-1-	+	1-1	-	-	+	1-1	1001 DICKEY RD	EAST CHICAGO	IM	-	LAKE	IND984873349
INDIANA RECYCLING INC	01	-	1-	1	-	-	1	-1	-	-	+	RILEY ROAD	EAST CHICAGO	IM	-	LAKE	DID983007533
INDUSTRIAL RESOURCE RECOVERY I	01	-	-	-	-	+	1-1	-	-	+	++		EAST CHICAGO	IM		LAKE	IND003872539
INDUSTRIAL SCRAP CORP	- 01	-	1	04	-	+	1-1	+	-	-	1	17856 HOMEWOOD AVE	EAST CHICAGO	IM		LAKE	DVD000673642
NLAND STEEL CO	-	-	-	-	06	100	1	-	-	-	-	425 W 152ND ST	EAST CHICAGO	DH	46312	LAKE	DVD051063479
	-	-	100	1		107	H	-	+	-	100	1743 EUCLID AVE	EAST CHICAGO	Di	44312	LAKE	IND#80825177
DILAND STEEL CO	01	02	67	10	3 06	07	1	13	11	3	117	3216 WATLING ST	EAST CHICAGO	Di	46312	LAKE	DVD085159199
S B TRANSPORT	01	_	_	-	1	-	1	-	_	-		420 E ISIST ST	EAST CHICAGO	DI	46312	LAKE	IND982212722
IAYMAR RUBY ALBERT OIVEN MFO	01	_	-	-	1		1-1	1	_1_	1		1301 W CHICAGO AVE	EAST CHICAGO	DI	44312	LAKE	DVD094765138
KENNEDY LEASING COINC				-		1	1 1	- 1	4			4000 CLINE AVE	EAST CHICAGO	DI	The state of the s	LAKE	DID983014000
KERN MCCIEE SERVICE STATION					-	1	1.1		4	_		1305 W CHICAGO AVE	EAST CHICAGO	IN		LAKE	IND#83614594
												2000 GARY AVE					





Table Continued) FINDS Dat base Retrieva

															_			
LAIDLAW WASTE SYSTEMS	01		П	0		T	Г		14			T	2000 CARY AVE	EAST CHICAGO	M		LAKE	D/D044230387
LEVI EDWARD STEEL CO	01	02	03	0.	1-	07	1	13	14		Ti	7	3001 DICKEY RD	EAST CHICAGO	IN		LAKE	D/D005463661
LEVY EDWARD C CO	ōi		02 .		1	1	1	1.	14	·	T	T	3001 DICKEY RD	EAST CHICAGO	N		LAKE	D(D901534209
LEVY SLAG AT LTV	Ι.		03		1	1.	1	1	-				3001 DICKY RD	EAST CHICAGO	DN		LVIG	DIDSS 4861839
M & T CHEMICALS INC	01	1	03	- jos	1	1	1	13	14				415 E 151ST ST	EAST CHICAGO	W		LAKE	D/D005443825
MARPORT SMELTING CO	-	1	03	-	06	07	1	1	14	Γ	Ti	,	4323 KENNEDY AVE	EAST CHICAGO	М	46312	LAKE	DVD#84886216
MARS I	1-	—	1	_	1	-	T	1-	14		П	7	1402 CARROLL ST	EAST CHICAGO	M	463123912	LAKE	D/D965022433
MARTIN OIL MARKETING	-	 	1		+	1	1-	1	ii			_	4910 KENNEDY AVE	EAST CHICAGO	M	44312	LAKE	D/D985023456
MCCAULIFFE MACHINERY	loi	02	03	- 10	7	107	١	1-	14	t-	† †	7	5300 INDIANAPOLIS BLVD	EAST CHICAGO	IN	44313	LAKE	DVD047830236
MCKEOWN TRANSPORT CO INC	1-	-	-1		+	1-	1	1-	lia	1	T	7	211 E COLUMBUS DR	EAST CHICAGO	M	443122709	LAKE	DID961949240
MEDALIST REID BOLT	01	\vdash	\vdash	-+		+-	1-	1-	-	1	tt	_	5334 INDIANAPOLIS BLVD	EAST CHICAGO	IN	46312	LAKE	D(D066213331
MOBIL OIL CORPORATION/E CHICAGO TERMINAL	F-	1-	\vdash			-	1-		14	1-	H	7	3821 INDIANAPOLIS BLVD	EAST CHICAGO	IN	443122390	LAKE	DID984952406
MOBIL OIL EAST CHICAGO TERMINAL	ōī	02	0)		· -	1	1	1	ii	1	††		3821 INDIANAPOLIS BLVD	EAST CHICAGO	IN	46313	LAKE	DND04333431
MODERN HARD CHROME	01	=	-	- 1-	- 04	1	1	1	-	1-	1-1	†	3550 CANAL RD NR RILEY RD	EAST CHICAGO	IN	44312	LAKE	IND#01191091
MONARCH STATION 0 2	<u> </u> -			-+-	- -	١.	1	1 -	14	ł	tt	_	1719 BROADWAY	EAST CHICAGO	IN	44313	LAKE	D/D#64929372
	oī.	-			-1-	- -	1	1,5		1	1-1	7	415 E 1515T ST	EAST CHICAGO	IN	44312	LAKE	DID004761855
MRI CORP E CHICAGO PLT	01	 	1-1	+	06	1	1.	1	10	t-	tt	-†	4530 BARING AVE	EAST CHICAGO	N		LAKE	DID047461819
NATIONAL INDUSTRIAL MAINTENANCE	01	ł	- 1		- (=	1	1	1	ļ.:	1	1-1:	7	4505 EUCLID AVE	EAST CHICAGO	IN	44312	LAKE	DVD021299730
NATIONAL PROCESSING CO NATIONAL PROCESSING CO PLT III	=		11		- -	1	1	-	1 -	1-	t-f	-1	4502 W CLINE AVE	EAST CHICAGO	IN	44312	LAKE	DIDSENSOSS4S
NATIONAL PROCESSING COPET III	ōī	1-	105		-1-	1-	1		li.	1-	1-1	7	5222 INDIANAPOLIS BLVD	EAST CHICAGO	IN	44312	LAKE	DVD074303298
NATIONAL REFRACTORIES	۳		03	- 1	1	1	1	1	lii	1-	1-1		425 W 151ST ST	EAST CHICAGO	IN	44312	LAKE	DID964973935
NOT-I INC	01		1-1	1	1	1	1	1		1-	1-1	- 1	SIGE COLUMBUS DR	EAST CHICAGO	IN	46312	LAKE	IND961934282
HIPSCO PIPELINE	ōi	1-	1		-1	1	1	1	1	1	tt	-1	US SHIP CANAL 0 21 MILES E OF DICKEY BD	EAST CHICAGO	IM		LAKE	IND#65015551
NIPSCO ROXANNA SUBSTA		1	11	04 T	- 1 -	1	1	1-	1	1-		-1	ROXANNA DR	EAST CHICAGO	IN		LAKE	IND961001634
NORTHERN INDIANA DOCK CO INC			05		0	1	1	1	14	1	1-1	-†	3601 CANAL ST	EAST CHICAGO	M		LAKE	IND014264525
HORTHWEST INDUSTRIAL SPECIAL	01	1	- 1		-	1	1	1		1	П	Ī	4333 INDIANAPOLIS BLVD	EAST CHICAGO	IM	44312	LAKE	IND#64933192
NU METHOD CLEANERS	1	1	05		1	1	1	1	1	1	П		901 W CHICAGO AVE	EAST CHICAGO	IN		LAKE	IND014344140
ORANGE I C AND CO	01	1-	1-1	-1	- 1	1	1	1	1	1			4616 PARRISH AVE	EAST CHICAGO	IM		LAKE	IND900793976
PASTRICK MARINA	1	1	1-1		-1-	1	1	1-	14	1	1-1	7	3301 ALDIS ST	EAST CHICAGO	IN		LAKE	INDec 30 30001
PEOPLES DRUG STORE INC	1	ļ	1-1	-+	-1 -	1.	1	1-	tiā	1	1-1	\neg	1313 W CHICAGO AVE	EAST CHICAGO	IN		LAKE	IND##1931043
PERRY PETROLEUM PRODUCT CARTAGE CORP	١.	1-	11	+	-1-	1	1	1-	14	1	\Box	\neg	321 E COLUMBUS DR	EAST CHICAGO	IN		LAKE	DID964963171
PHILLIPS PIPELINE CO	01	102	03	-	-1 -	07	1-	1	iī	1	17	7	400 E COLUMBUS DR	EAST CHICAGO	IN	46312	LAKE	IND072333909
	01	+-	H		-1-	-	1	1	1-	1	17	_	1140 E CHICAGO AVE	EAST CHICAGO	K		LAKE	DID964893810
PHOENIX ENGINEERING	01	-	1-		-1-	1	1	1	1-	t-	1-1	_	2500 GARY AVE	EAST CHICAGO	N		LAKE	IND964893034
PLANT INSPECTION CO	01	t-	1	04 0	5 0	07	1	1	14	1-	1-1	-1	4343 KENNEDY AVE	EAST CHICAGO	UN	46312	LAKE	IND000646943
POLLUTION CONTROL INDUSTRIES O	01	02	03	=		F	1	1	14	1	11	-	4400 KENNEDY AVE	EAST CHICAGO	M	46312	LAKE	DND094738762
PRAXAIR	01	۴.	1	04 0		+	1	1	14	1-	1-1	i ,	4330 KENNEDY AVE	EAST CHICAGO	IN	44312	LAKE	IND077001147
PRAXAIR INC	۳	1	 '	- 6	_	-	- -	1	+	t-	1-1	-	KLINE AVE AT CALUMET RIVER	EAST CHICAGO	M	44312	LAKE	IND900408079
PUREX CORP	01	+	╁─┤	-f	-+-	+-	1	-	t-	 	╁┼	-1	3340 INDIANAPOLIS BLVD	EAST CHICAGO	IN	44312	LAKE	IND033215299
RAILOC OF INDIANA INC	61	1 -	1-	-+		1	1	1-	1-	t	 	-	4303 KENNEDY AVE	EAST CHICAGO	M	443122723	LAKE	DID964899300
AOBINSON STEEL CO INC	۳	1-	1-1	+	- -	+	1	1	14	-	†-†	-	414 ENCLID AVE	EAST CHICAGO	IN	44312	LAKE	DID964940334
ROOPES CARRIAGE	01	1-	1-1		-1-	1	1	1	1:	1-	11	-	601 E CHICAGO AVE	EAST CHICAGO	IN		LAKE	DVD004354916
SARGENT ELECTRIC COMPANY	1:		1 1	1	1	1	1	1	14	1	1-1		2400 MICHIGAN ST	EAST CHICAGO	IN		IAKE	DID964973961
SHELL OIL CORP		1	1		1	1	1	1	114	1	1 1	- 1	2100 E COLAMBUS DR	EAST CHICAGO	M	4312	LAKE	IND#85047174
SHELL SERVICE STATION	1	1	-	- -	-1		1		1	1	1 1		4804 INDIANAPOLIS BI.VD	EAST CHICAGO	M	44312	LAKE	DVD983033734
SHELL SERVICE STATION 2409	0.	ļ		}-		1	1	1 -	1::		11		425 W 151 ST UNIT 6	EAST CHICAGO	M	44312	LAKE	D/D984874784
SMITH DELBERT L CO INC	01	1-	03		-1.	1-	1	1	1.	1-	 	-	4021 FIRST	EAST CHICAGO	M	4013	LAKE	D/Dec-1881930
ST CATHERINE HOSPITAL	01	+-	03	-	- 0	+-	+	1	lii	1	++	-	3444 DICKY RD	EAST CHICAGO	IN	44312	LAKE	DVD005478546
STANDARD FORGING CORP	01	+-	 	+	-1	+-	+	-	اٽ	1-	††	-	3400 CANAL STREET	EAST CHICAGO	N	44312	LAKE	DIDOGGGG 196
TEXACO INC TEXACO USA DIV	15.	+-	03	+	+	+-	+-	+-	+-	1	1 1	-	3400 CANAL	EAST CHICAGO	IN		LAKE	D/D664861805
TEXAS PIPELINE	+	1-	8	-		+-	+	+	t-	1-	11	-1	1216 E 145TH ST	EAST CHICAGO	M	44312	LAKE	DIDSS 1003
TIGER SERVICES INC	01	╂	F-	+		+	1-	1	1-	†	 	-	1245 E 145TH ST	EAST CHICAGO	M	44312	LAKE	DID661193616
TIGER SERVICES DIC	15.	1	1-				-	-	11	+-	╁┼	-	1102 CARROLL ST	EAST CHICAGO	M	_	LAKE	DID483040933
TOMYS SERVICE			-	-	-+-	1	1.	1 -	1:2	1-	1-1		DOO W ISIST ST	EAST CHICAGO	IN		LAKE	D/T190014396
IMION TANK CAR CO	01		0)		5 0		1	1	hã	1-	 	7	131 ST & BAILBOAD AVE	EAST CHICAGO	IN		LAKE	DID003454038
UNION TANK CAR CO	101		03		-1-	1-	•	1	tii	+-	1-1	-	1100 E 145TH	EAST CHICAGO	M		LAKE	DVD173429403
UNION TANK CAR CO E C REPAIR	101		1	-+		1:	1	1	1	 	t-t	-	HIRD & CAREY ST	EAST CHICAGO	IN	4312	LAKE	DID#61940313
INITED BAIL SERVICE INC	101	_	لـــا				-		_			-			-			







I (Continued) FIND Database Ret /al

I IS OYPSUM CO	01	03			I	1	14		17	3501 CANAL ST	EAST CHICAGO	IN	46312	LAKE	IND094760501
I B REDUCTION CO	 01	03		06		1	14		17	4610 KENNEDY AVE	EAST CHICAGO	IN	44312	LAKE	DVD005130638
VIKING ENGINEERING				1		1	14			2300 MICHIGAN ST	EAST CHICAGO	IN	46212	LAKE	DVD965047365
VIKING ENGINEERING COINC	 01		-	1.1	1	1	1	-	1	175 W CHICAGO AVE	EAST CHICAGO	IN	44312	LAKE	DVD984864418
VOEST ALPINE SVC3 AND TECH CORP	 01	03	04	1-1	07	-			-	425 W 151 ST	EAST CHICAGO	IN	46312	LAKE	DVD005447842
WALLACE METALS INC	 	-		11		-			-	1202 1/2 E CHICAGO AVE	EAST CHICAGO	-	46312	LAKE	DVD014245753
WALLACE METALS INC						_	114			1202 E CHICAGO AVE	EAST CHICAGO	IM	463123517	LAKE	IND985033463

5.1 AERIAL PHOTOGRAPHS & MAPS

An examination of aerial photographs taken in 1978 shows numerous tanks and processing structures on the ECI site. The plant was obviously in operation as shown by functioning stacks. Some of the tanks on the site had open tops and appear to have been filled or partially filled with liquid. Several undated aerial photos taken after the site was leveled indicate that all of the surface structures have been removed. Some features such as roads and railways are still visible. It appears that much of the area has been backfilled and graded. Outlines of concrete pads that once held storage tanks are still visible, especially in the northern end of the site. There appear to be areas of sparse vegetation perhaps indicating areas where spills had occurred or where there are surficial quantities of construction debris. There appears to be an extensive pool of free phase liquid north of the railroad track which may consist of water or liquid contamination or some combination of both.

One of the important features of East Chicago revealed by the aerial photographs is the heavy industrialization of the area. All the land adjacent to the Lake George Branch of the Indiana Harbor Canal and the Indiana Harbor Canal is industrial, and appears to be centered around refining and coal processing. There is a residential area northwest of the ECI site, but there is a band of industrial property between the ECI site and the residences. There are no open nearby sites suitable for construction of an upland CDF. Open areas near the site are either inundated with water or directly adjacent to residential areas.

6. SITE CHARACTERIZATION DATA

Geraghty & Miller, Inc. collected data from 49 wells, borings and piezometers on the ECI site between November 20, 1991 and March 20, 1992 on presence and thickness of free phase hydrocarbon product in the wells. Plate I-1 shows the locations of wells, borings and piezometers and the minimum and maximum product thickness where product was encountered. Table I-2 shows the thickness of the free phase product during the period from 22 to 24 March 1993. It should be noted that Table I-2 includes wells not located in Parcels IIA and IIB and not shown in Figure I-1. Table I-3 shows the American Petroleum

Institute (API) gravity and specific gravity for the product encountered. Table I-4 shows the API gravity, viscosity and PCB concentration for samples of product. Additional site characterization data was collected by ERM and summarized in a report entitled Phase III: Subsurface Characterization of the ECI site. The results of this report have been discussed with numerous members of the USEPA, the IDEM, the City of East Chicago and Geraghty & Miller. At the time this appendix was prepared, however, the Phase III report was not available for review. In addition, some information from the Ecology & Environment Scoring of the ECI site was discussed, but this report was also not available for review. These documents and all forthcoming characterizations will be reviewed and discussed in greater detail in the future.

7. PHONE COORDINATION

U.S. Army Corps of Engineers personnel coordinated with Mr. Dave Petrovski of the USEPA, Ms. Carla Gill of the IDEM, Ms. Kay Nelson of the City of East Chicago, and Ms. Kathy Duchac of Geraghty & Miller, Inc.

8. HTRW ENVIRONMENTAL ISSUES

The presence of HTRW at the ECI site is well known. ARCO, Inc. and the City of East Chicago have documented the presence of petroleum related HTRW, and will perform a limited quantification of the volume and range of wastes present. Although construction of the CDF at the ECI site may introduce some added liability that would not be involved in construction at a clean site, it seems likely that this liability will be offset by significant cost savings in engineering and constructing the CDF, and complying with regulatory requirements.

The presence of the HTRW should not significantly impact the design, construction, or operation of the CDF, although it is likely that workers will be required to wear personal protective equipment during construction. Personal protective equipment will also be required during dredging the harbor and filling the CDF and possibly for monitoring activity, but this is a result of the nature of the sediment and not the location of the CDF.

Northwest Indiana is a heavily industrialized area. Building a CDF for Indiana Harbor sediments, some of which are regulated under the Toxic Substances Control Act (TSCA) due to PCB concentrations, in a clean area is less desirable than constructing the CDF at the ECI site for two reasons:

- a. The USEPA and the IDEM have already indicated that if the CDF is built at a noncontaminated or "green" site, stringent liner and collection systems will be required at substantial additional cost. In addition, the USEPA and the IDEM have already demonstrated that they favor the plan to construct the CDF at the ECI site.
- b. Building a CDF at a clean site would place contaminated material on one of northwest Indiana's few remaining green areas, and based on the demographic layout of the area, possibly bring contaminated material closer to a residential area. In contrast, building the CDF at the ECI site keeps the Indiana Harbor sediment in an industrial area and will not consume one of the few remaining green sites.

The ECI site is located in a prime location for construction of a CDF, based on proximity to the dredging location and ease of transporting the dredged sediment. The liability associated with loss of TSCA contaminated sediment during transport to the ECI site is significantly less than the liability associated with transporting the sediment over land to a more distant site.

In addition, since the CDF would be constructed in conformance with RCRA closure and corrective action, it seems likely that additional analysis required for design of the CDF could be accomplished by cooperative efforts with other parties involved. Geraghty & Miller have indicated their desire to tailor future ECI sampling and analysis to U.S. Army Corps of Engineers requirements.

Since the ECI site will be contained using a slurry wall and a maintained inward gradient, the risk of migration of sediment related contaminants is very low.

In addition to disposal of dredged material from the Federal navigation channel, materials excavated from the Inland Steel Company and LTV Steel Company berthing areas is also expected to be placed in the CDF. Dredged

materials generated from the Inland Steel Consent Decree sediment remediation activities would be disposed of in the CDF as well. Any potential problems that might arise could be dealt with cost effectively, and the cost would be spread out among the all the parties involved.

9. CONCLUSIONS

There is significant petroleum based HTRW contamination at the ECI site. However, the HTRW should have no significant adverse impact on the design, construction or operation of the CDF. In fact, the condition of the ECI site will allow for construction of a CDF without costly liner and collection systems. Cooperative efforts between the parties involved will allow much of the necessary analysis to be conducted and paid for by non-Federal interests.

Ground Water Elevations and Product Thickness

Quarterly Site—Wide Well Gauging Main Refinery Area

			Ī	j	Uncorrected	Corrected	
Well No.	Top of Casing	Death to	Depth to	Product	Ground Water	Ground Weter	Fluid
	Elevetion	Water	Product	Thickness	Elevetion !	Elevention	Elevato
MW-1	588.63	6.88	4.80	2.08	581.75	583.41	583.83
MW-4	589.27	2.93	2.93	0.00	586.34	586,34	586.34
MW-5	589.78	10.21	10.17	0.04	579.55	579.58	579.59
MW-6	590.56	3.70	3.70	0.00	586.86	586.86	586.86
MW-7	592.85		4.58	0.08	588.19	588.25	588.27
		4.66			580.29		
MW-11	586.29	6.00	0.35	5.65	585.82	584.81	585.94
MW-12	586.12	0.30	0.05	0.25		586.02	586.07
MW-13	586.41	1.72	0.30	1.42	584.69	585.83	586.11
MW-14	586.49	0.66	0.57	0.09	585.83	585.90	585.92
MW-15	586.69	0.78	0.78	0.00	585.91	585.91	585.91
MW-16	586.39	0.65	0.65	0.00	585.74	585.74	585.74
MW-17	586.05	0.40	0.40	0.00	585.65	585.65	585.65
MW-18	586.21	0.69		0.00	585.52	585.52	585.52
MW-19	586.95	0.99	0.96	0.01	585.96	585.97	585.97
WW-20	586.44	0.48	0.48	0.00	585.96	585.96	585.96
MW-21	586.36	0.40	0.40	0.00	585.96	585.96	585.96
WW-22	586.62	0.63	0.63	0.00	585.99	585.90	585.99
WW-53	586.85	0.88	0.88	0.00	585.97	585.97	585.97
MW-24	586.72	0.75	0.75	0.00	585.97	585.97	585.97
	589.48		3.36	0.63	585.49	585.99	586.12
MW-25	588.89	3.99		0.75	583.04	583.64	583.79
MW-28		5.85	5.10		587.79		
W-27	590.91	3.12	2.76	0.36		588.08	588.15
W-28	588.1	2.81	1.11	1.70	585.29	586.65	586.99
W-29	591.39	8.32	3.22	5.10	583.07	587.15	588.17
MW-30	586.05	0.16	0.15		585.89	585.89	585.89
MW-31	588.23	0.91	0.91	0.00	587.32	587.32	587.32
MW-32	587.84	4.24	1.22	3.02	583.60	586.02	586.62
MW-33	588.63	6.07	6.07	0.00	582.56	5 82.56	582.56
hezometer Na.							
P-1	586.64	5.35	245	2.90	581.29	583.61	584.19
P-2	586.82	0.72	0.72	0.00	586.10	586.10	586.10
P-3	586.21	0.00	0.00	0.00	586.21	586.21	586.21
ρ.	587.71	2.30	2.30	0.00	585.41	5 85.4 1	585.41
p. 5	587.86	3.37	3.37	0.00	584.49	584.49	584.49
P-6	587.62	1.99	1.99	0.00	585.63	585.63	585.63
2-7	587.80	1.61	• 51	0.00	586.19	586.19	586.19
۾ م	587.27	1.32	1.2	0.00	585.95	585.95	585.95
	588.40	4.05	4 05	0.00	584.35	584.35	584.35
			2.65	0.14	588.33	500.44	588.47
P	591.12	2.79		0.00	588.79	588.79	
ρ	591.70	2.91	291				588.79
2. 2	591.42	3.24	277	0.47	588.18	588.56	588 65
P	591.47	3.46	3.46	0.00	588.01	588.01	588.0
7	591.63	5.75	3.96	1.79	585.88	587.31	587.6
	591.93	3.56	3.56	0.00	588.37	588.37	588.3
P	591.77	3.57	3.57	0.00	588.20	588.20	588.2
	592.09	4.02	4.02	0.00	588.07	588.07	588.0
	589.00	3.46	3.12	0.34	585.54	585.81	585.8
P-31	589.60	4 98	3.52	1 46	584 62	585.79	586 0
2-32	590.22	196	3.85	0.14	586.23	586.34	586 3
P-33	590.33		2.64	0.00	587.69	587.69	587 6
P-33 P-34	590.32	4 31	431	0.00	586.01	586.01	586 (
					C76 00	582.44	583.6
P-35N 1	587.68		3.85		574.43	582.13	584 (
P-36N	587.69	13.26	3.64	9.62			
0-37N	589.62	6.91	6.91	3.00	582.71	582.71	582.7
-38N	589.74	4 60	4 60	0.00	585.14	585.14	585
P-39	589.26	3.79	3.79	0.00	585.47	585.47	585
P-40	590.21	7 38	103	3.36	582.83	585.52	586

NOTES.

^{*} Elevations referenced to mean sea level (MSL)

Depth to water and product thickness data presented in feet.

Elevations corrected for the presence of product, using an average specific gravity of 0.80, for the product.

Table I-2(Continued) Ground Water Elevations and Product Thickness



Quarterly Site-Wide Well Gauging West Tank Farm Area

Well No.	Top of Casing Devetton	Depth to Watter	Death to Product	Product Thickness	Ground Water Elevetion	Ground Water Elevetton	Fu
WW-2	586.21	5.10	4.96	0.14	581.11	581,22	581.25
MW-3	587.71	5.05	3.00	2.05	582.66	584.30	584.71
Recovery Wells		40 707	ALC: NO				
PRW-42	586.01	6.45	6.40	0.05	579.56	579.60	579.61
PRW-43	585.89	6.83	6.78	0.05	578.86	578.90	578.91
PRW-44	585.42	7.50	7.05	0.45	577.92	578.28	578.37
PRW-45	585.66	6.90	6.90	0.00	578.76	578.76	578.76
PRW-46	585.87	7.32	6.94	0.38	578.55	578.85	578.93
PRW-47	586.44	7.12	712	0.00	579.32	579.32	579.32

NOTES:

Elevations referenced to mean sea level (MSL).

Depth to water and product thickness data presented in feet.

Elevations corrected for the presence of product using an average specific gravity of 0.80 for the product.





Table I-2 (Continued) Ground Water Elevations and Product Thickness

Quarterly Sits-Wide Well Gauging South Tank Farm Area

Well No.	Top of Casing Elevetion	Decith to Watter	Depth to	Product Thickness	Uncorrected Ground Water Bevation	Corrected Ground Water Elevertion	Fluid Elevato
W-8	588.01	7.78	6.09	:.69	580.23	581.58	581.92
MW-9	588.20	7.25	7.25	0.00	580.95	580.95	580.95
MW-355	587.40	1.03	1,03	0.00	586.37	586.37	586.37
MW-36S	587.19	1.58	1.58	0.00	585.61	585.61	585.61
MW-375	586.85	3.28	3.28	0.00	583.57	583.57	583.57
MW-38S	586.96	4.12	1.46	2.66	582.84	584.97	585.50
₹-20	584.53	3.87	2.93	0.94	580.66	581.41	581.60
P-21	584.76	4.14	3.55	0.59	580.62	581.09	581.21
P-22	585.69	4.70	4.70	0.00	580.99	580.99	580.99
P-23	585.87	5.62	4.78 i	0.84	580.25	580.92	581.09
P-24	584.86	3.80	3.80	0.00	581.06	581.06	581.06
P-25	584.42	3.35	3.35	0.00	581.07	581.07	581.07
7-26	585.03	4.01	4.01	0.00	581.02	581.02	581.02
P-27	585.33	4.45	4.45	0.00	580.88	580.88	580.88
P-28	584.96	4.42	3.80	0.62	580.54	581.04	581.16
P-29	583.81	2.51	2.51	0.00	581.30	581.30	581.30
Pecovery Wells							
PRW-1	586.47	5.70 :	5.70	0.00	580.77	580.77	580.77
PRW-2	586.45	5.76	5.76	0.00	580.69	580.69	580.69
PRW-3	586.39	6.13	6.09	0.04	580.26	580.29	580.30
PRW-4	586.50	6.28	6.13	0.15	580.22	580.34	580.37
PRW-5	586.76	7.31	6.55	0.76	579.45	580.06	580.21
PRW-6	587.16	7.46	6.71	0.75	579.70	580.30	580.45
38W-7	587.56	7.71	703	0.68	579 85	580.39	580.53
PRW-8	587.70	7.25	7.14	0.11	580.45	580.54	580.56
PRW-9	587.55	7:13	713	0.00	580.42	580.42	580 42
PRW-10	587.43	7.29	7.29	0.00	580.14	580.14	580.14
28W-11	587.76	7.24	7.24	0.00	580.52	580.52	580.52
PRW-12	587.29	6.70	6.65	0.05	580.59	580.63	580.64
PRW-13	587.23	6.58	6.55	0.03	580.65	580.67	580.68
PRW-14	586.55	6.71	6.69	0.02	579.84	579.86	579.86
PRW-15	586.74	6.43	5.40	0.03	580.31	580.33	580.34
PRW-16	586.71	6.33	6.33	0.00	580.38	580.38	580.38
PRW-17	586.63	6.17	6.17	0.00	580.46	580.46	580.46
PRW-18	586.77	6.30	5.30	0.00	580.47	580.47	580.47
PRW-19	586.60	6.25	5.25	0.00	580.35	580.35	580.35
PRW-20	587.14	6.31	5.31	0.00	580.83	580.83	580.83
PRW-21	586.76	6.60	5.60	0.00	580.16	580.16	580.16
PRW-22	587.09	6.37	6.37	0.00	580.72	580.72	580.77
PRW-23	587.35	6.94	6.94	0.00	580.41	580.41	580.4
PRW-24	587.81	7.35	7.29	0.06	580.46	580.51	580.5
PRW-25	587.94	7.82	7.57	0.25	580.12	580.32	580.3
PRW-26	588.07	7.39	7.35	0.04	580.68	580.71	580.7
PRW-27	588.11	7.64	7.64	0.00	580.47	580.47	580.4
PRW-28	588.47	7.87	7.87	0.00	580.60	580.60	580.€
	588.24	7.59	7.59	0.00	580.65	580.65	580.6
PRW - 29	588.05	7.25	7 21	0.04	580.80	580.83	580.8
28W-30	587.58	7.56	7 27	0 29	580.02	580.25	580.3
PRW-31	588.96	7. 35 6. 86	581	0.05	580.10	580.14	580.1
PRW-32			5.48	3.02	580.10	580.12	580.1
PRW - 33	586.60	6.50	5 20	0.14	580.34	580.45	580.4
PRW-34	586.68	5.34	5.87	0.08	581.29	581.35	581.3
PRW-35	587.24	5.95	5.85	0.38	580.62	580.92	581 (
PRW-36	586.85	6.23	5.73	1.28	579.84	580.86	581
28W-37	586.85	7.01		1.22	579 53	580.51	580
29W-38	586.56	7 03	5.81		57 9 86	580.33	580
PRW-39	586.14	6.28	5 69	0.59	574 96 574 96	578.95	579
29W-40	585.57	10.62	5.62	5.00			
2RW-41	585.36	8.58	5 21	3.37	576.78	579.48 579.90	580 580

NOTES.

Elevations referenced to mean sea level (MSL).

Death to water and product thickness data cresented in feet.

Elevations corrected for the presence of product, using an average specific gravity of 0.80, for the product.



HYDROCARBON API AND SPECIFIC GRAVITIES



ECI REFINERY SITE EAST CHICAGO, INDIANA (Page 1 of 2)

Location ⁽¹⁾	Date Sampled	API Gravity [©]	Specific Gravity ^{on}
Pipeline	1/8/92	33.6	0.857
MW01	7/19/91 1/8/92 Average	33.4 32.5 33.0	0.860
MW02	2/14/92	29.9	0.877
MW03	7/19/91 2/14/92 Average	26.1 26.4 26.3	0.897
MW05	2/14/92	41	0.820
MW06	7/19/91 2/14/92 Average	20.6 ⁽⁴⁾ 26.9 23.8	0.911
MW07	7/19/91	38.8	0.831
MW08	7/19/91 2/14/92 Average	34.3 34.0 34.2	0.854
MW09	7/19/91 2/14/92 Average	27.7 ⁽⁴⁾ 34.3 31.0	0.871
MWII	12'12'91 1/8/92 Average	30.4 30.5 30.5	0.873
MW12	12/12/91 1/8/92 Average	33.2 32.6 32.9	0.861
MW13	1/8/92	35.8	0.846
MW26	1/8/92	25.7	0.900
MW27	2/14/92	29.3	0.880
MW28	1/7/92	31.6	0.868
MW32	1/7/92	45.8	0.79
MW38	2/14/92	34.9	0.850



HYDROCARBON API AND SPECIFIC GRAVITIES

ECI REFINERY SITE EAST CHICAGO, INDIANA (Page 2 of 2)

Location ^{a)}	Date Sampled	API Gravity ^{co}	Specific Gravity ^{on}
P11	1/8/92	35.8	0.846
P15	1/8/92	35.4	0.848
P20	1/2/92	32.5	0.863
P21	1/2/92	36.1	0.844
P23	1/2/92	35.2	0.849
P28	1/2/92	38.6	0.832

Notes:

Only those locations where hydrocarbon samples were collected are shown.

- API gravity analysis was conducted at 60 °F.
- Specific gravity was calculated by using the average API gravity as follows:

Analysis was performed by Bresiube USA, Inc. on samples collected in June 1991.

An average specific gravity of 0.858 was assumed for the following wells: EW01, MW16, MW20 to MW25, MW29, P01, P06, P09, P12, P13, P16 - P18, P22, P24 to P27.

API = American Petroleum Institute.





SUMMARY OF HYDROCARBON CHARACTERISTICS "

ECI REFINERY SITE EAST CHICAGO, INDIANA (Page 2 of 2)

		P	CBs (mg/k	g)	API	*** O)
Location	Date Sampled	Aroclor 1248	Aroclor 1254	Aroclor 1260	Gravity ^{ca} (dimensionless)	Viscosity ^a (centistokes)
MW32	1/7/92	<1	< 1	< 1	45.8	1.39
MW38	1/7/92 2/14/92	<1 NA	<1 NA	<1 NA	NA 34.9	3.20 3.55
P06	11/4/91	23	< 5	< 5	NA	NA.
P11	1/8/92	< 5	< 5	< 5	35.8	3.43
P13	1/8/92	< 5	< 5	< 5	NA	NA
P15	1/8/92	< 5	< 5	< 5	35.4	2.78
P17	1/8/92	< 5	< 5	< 5	NA	NA
P20	1/2/92	< 1	< 1	< 1	32.5	5.02
P21	1/2/92	< 1	<1	<1	36.1	2.90
P23	1/2/92	<1	< 1	< 1	35.2	3.37
P28	1/2/92	< 1	<1	< 1	38.6	2.32

Notes:

- Analyses were conducted by Core Laboratories, unless otherwise noted. Only the PCBs detected in at least one sample are presented.
- API gravity analysis were conducted at 60 °F.
- O Viscosity analyses were conducted at 25 °C, unless otherwise noted.
- Analysis was performed by Breskube USA, Inc. on samples collected in June 1991.
- 31 Result presented is at 20 °C.

Key:

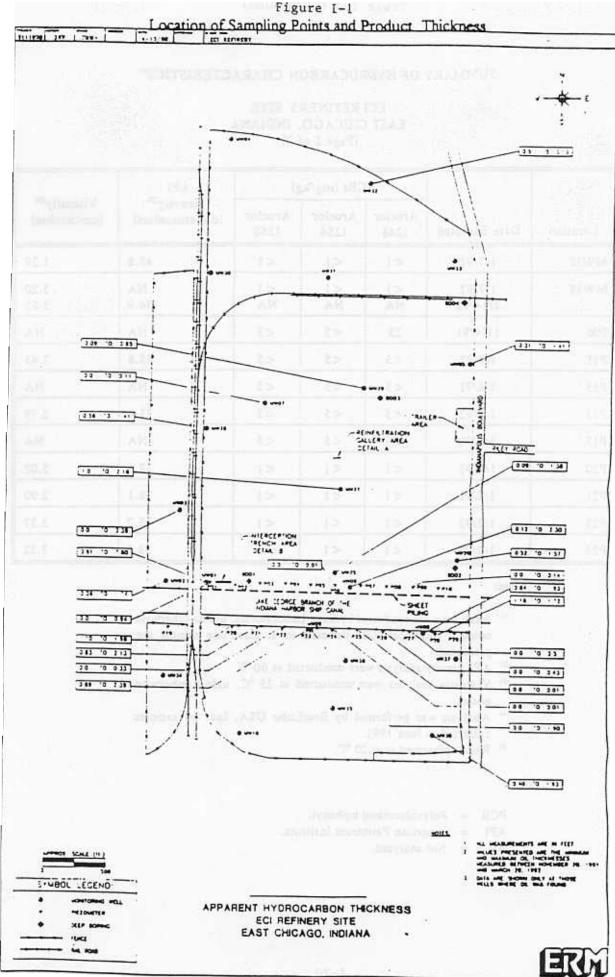
PCB = Polychlorinated biphenyl.

API = American Petroleum Institute.

NA = Not analyzed.









ATTACHMENT I-1 DATA FROM PREVIOUS SITE INVESTIGATION

DATA FROM PREVIOUS SITE INVESTIGATION

The following excerpt is from the scope of work to collect groundwater samples in 1995. The excerpt contains a summary of previous groundwater investigations performed by ERM at the site.

1.5 Groundwater Analytical Results

Groundwater samples were collected in June 1991, November 1991, and January 1992. The sampling events were planned for characterization of the site and evaluation of the treatment required for disposal of the groundwater. The results obtained for site characterization will be presented first, followed by the analyses performed for treatment requirements.

1.5.1 Site Characterization of Groundwater

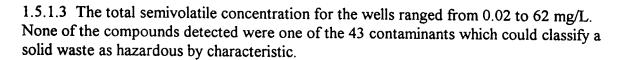
- 1.5.1.1 The groundwater samples that were collected in June and November of 1991 were analyzed for volatiles, semivolatiles, dissolved and total metals. Pesticides and PCBs were also analyzed in the November 1991 sampling event.
- 1.5.1.2 The highest concentration of volatiles was detected in monitoring well MW-32 at the north end of the site. This was one of the wells that contained free product. The total volatile concentration for the wells ranged from 0.002 to 2,130 mg/L. Of that total, BTEX was the largest contributing component with a range of 0.02 to 1,790 mg/L. As specified in 40 CFR 261.24, forty-three contaminants can cause a solid waste to be classified as hazardous if the regulatory limits are exceeded using the TCLP test method. The only volatile compounds found on site that are on the list of the 43 contaminants are benzene, chlorobenzene, chloroform, and 1,2-dichloroethane. These volatile compounds were present in at least one of the two groundwater sampling events and Table 3 summarizes the range of the detected concentrations. Other volatile organics that were detected in at least one sample included: methylene chloride; acetone; 1,2-dichloroethane; 1,1,2-trichloroethane; 1,1,2,2-tetrachloroethane; chloroform; and 4-methyl-2-pentanone.

Table 3. Groundwater Concentration of Volatile Compounds

gypppint gyppint printer in a care	Range of Detected	TCLP	Number of	Number of
Parameter	Concentrations	Limit	samples	samples with
I I I			collected	detected values
Benzene	0.02 to 57 mg/L	0.5 mg/L	15	12
Chlorobenzene	0.002 to 0.02 mg/L	100 mg/L	15	4
Chloroform	0.04 mg/L	6 mg/L	15	1
1,2-dichloroethane	0.06 mg/L	0.5 mg/L	15	1

Notes: The analysis of groundwater cannot always be directly correlated to the TCLP regulatory limit. It is dependent on the percent solids in the sample.







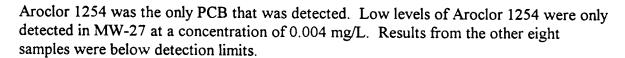
1.5.1.4 All the pesticide concentrations of nine groundwater samples were quantitative estimates except for a detected concentration of 0.51 ug/L for 4,4'-DDE in MW-25. The highest quantitative estimates of pesticides were in MW-32 and ranged from 0.6 (endrin) to 3.3 ug/L (gamma chlordane). Only six pesticides which are listed as one of the 43 D-listed contaminants were quantitatively estimated above the detection limit. The remaining were at or below the detection limit. However, two pesticides which were not tested for and are D-listed contaminants were 2,4 D and 2,4,5 TP (silvex). Table 4 lists the results of the pesticide concentrations.

Table 4. C

`						
Parameter	Parameter Range of Detected Concentrations					
Alpha chlordane	0.01 - 1.2 ug/L (estimated)	30 ug/L				
Gamma chlordane	0.0064 - 3.3 ug/L (estimated)	1				
Endrine	0.013 - 0.6 ug/L (estimated)	20 ug/L				
	0.013 - 0.055 ug/L (estimated)	8 ug/L				
	0.0085 - 1.6 ug/L (estimated)	1				
	0.025 - 0.32 ug/L (estimated)	10,000 ug/L				

Notes:

- 1. The concentration ranges followed by the notation "estimated" means the laboratory provided a quantitative estimate. All the other results were below detection limit.
- 2. The analysis of groundwater cannot always be directly correlated to the TCLP regulatory limit. It is dependent on the percent solids in the sample.



1.5.1.5 Arsenic, barium, chromium, lead, and mercury are the metals on the toxicity characteristic list in 40 CFR 261.24 that were detected in the groundwater samples. Table 5 lists the range of each parameter and the regulatory limits.

Table 5. Groundwater Concentration of Metals

Parameter	Range of Detected Concentrations	TCLP Limit
Arsenic	0.004 - 0.1 mg/L (estimated)	5 mg/L
1	0.09 - 1.5 mg/L	100 mg/L
	0.007 - 0.2 mg/L (estimated)	5 mg/L
· 	0.01 - 2 mg/L (estimated)	5 mg/L
	0.0005 - 0.004 mg/L (estimated)	0.2 mg/L

Notes:

- 1. The concentration ranges followed by the notation "estimated" means the laboratory provided a quantitative estimate for all the samples analyzed.
- 2. The analysis of groundwater cannot always be directly correlated to the TCLP regulatory limit. It is dependent on the percent solids in the sample.



- 1.5.2. Evaluation of the Treatment Required for Groundwater Disposal
- 1.5.2.1 Groundwater samples collected to evaluate treatment of the groundwater were taken from various wells in June and November of 1991 and January of 1992. Copper, lead, nickel, dissolved iron, cyanide, and oil and grease were detected above the pretreatment standards of the City of East Chicago's wastewater treatment plant in one or more sampling events.
- 1.5.2.2 Currently, groundwater samples are collected from the four recovery wells along the north bank of the canal. The samples are collected quarterly and analyzed for metals, volatiles, and miscellaneous inorganics. Table 6 shows the range of the analytical results above detection limit from samples collected 3/93, 6/93, 10/93, 12/93 and 4/94, which was the most recent data reviewed. It should be noted that the groundwater is reinjected into the subsurface through a re-infiltration trench.

Table 6. Analytical Results for Recovery Wells

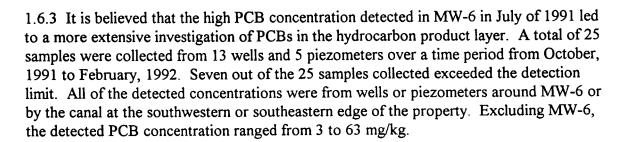
Parameter	Range of Concentrations	TCLP Limit			
Arsenic	ND - 0.06	5 mg/L			
Lead	ND - 0.02	5 mg/L			
Acetone	ND - 0.05				
Benzene	ND - 0.25	0.5 mg/L			
Ethylbenzene	ND - 0.03				
Methyl tert butyl ether	ND - 0.43	er bor standos a es Costa lles fins cost			
Xylenes	ND - 0.15	e sale mandi na doora			

Notes:

- 1. The units are mg/L and ND means not detected.
- 2. The analysis of groundwater cannot always be directly correlated to the TCLP regulatory limit. It is dependent on the percent solids in the sample.
- 3. The parameters acetone and methyl tert butyl ether were not analyzed on two of the sampling dates.
- 1.6 Free Phase Hydrocarbon Analytical Results
- 1.6.1 According to hydrocarbon and groundwater measurements from 29 wells and 18 piezometers, a hydrocarbon pool is floating above the groundwater. Measurements taken approximately every two weeks from 11/20/91 through 3/20/92 indicate that the hydrocarbon layer is not continuous throughout the site.
- 1.6.2 The free product from four wells was sampled in July of 1991 and January of 1992. The hydrocarbon samples were analyzed for volatiles, RCRA metals, PCBs, and physical characteristics. Table 7 summarizes the results of the detected compounds for all the tests but the physical characteristics. The sample with the PCB concentration of 850 mg/kg was collected from MW-6, located by the canal at the southern end of the property.



Parameter	Range of Detected Concentrations	Number of samples collected	Number of samples with detected values
Benzene	51 to 920 mg/kg	4	4
Ethylbenzene	230 to 670 mg/kg	4	4
	45 to 130 mg/kg	4	4
_	470 to 2,300 mg/kg	4	4
	0.5 to 2.3 mg/kg	4	3
	0.2 to 0.5 mg/kg	4	2
	0.5 to 1.8 mg/kg	4	2
	2.5 to 6 mg/kg	4	3
	850 mg/kg	4	1



- 1.6.4 Comparing the existing wells to the boreholes being drilled for this scope of work, free product was encountered in wells near the proposed location of BH-102, BH-106 and BH-111. Although the free product in the wells by the canal contained detectable levels of PCBs, the free product from the existing wells located near the proposed boreholes were below detection limits when the wells were sampled in January, 1992.
- 1.6.5 This scope of work also includes sampling existing wells MW-1, 5, 26, and 29. Free product was encountered in all the wells during the well gaging conducted from 11/20/91 through 3/20/92. Hydrocarbon samples were collected from MW-1, 26 and 29. The PCB concentration in MW-1 and 29 was below detection limits. The PCB concentration in MW-26 was from below detection limits to 11.4 mg/kg.
- 1.6.6 As stated before, an oil recovery system is in operation by the canal at the south end of the property. The recovered oil is tested for PCBs and since the PCB concentration has historically been less than 50 ppm PCBs, the oil product is not regulated by TSCA. The recovered oil is disposed of through a recycler.







ATTACHMENT I-2 RESULTS FROM 1995 GROUNDWATER SAMPLING EVENT



Results from 1995 groundwater sampling event

ID number	CE-101	CE-103	CE-104	CE-106	MW-1	MW-5	MW-26	MW-29	East
Well screen btm (ft bgs)	17.9	101.7	17	17.5	2.9	3.2	0.7	1	Chicago
Well screen top (ft bgs)	27.9	110	27	27.5	12.6	12,9	10.7	11	San.
Date installed	Oct-95	Nov-95	Oct-95	Nov-95	Sep-90	Sep-90	Oct-91	Oct-91	District
Free product	No	No	No	No	Yes	No	Yes	Yes	Limits1
Volatiles, ug/L				ELC.	E.0:	12		CARLET A	
Benzene	450	JUMB.	TO BELLEVI	19	600	4600	1	1100	1650
Toluene		BUDGE!	1			640			NL ²
Ethylbenzene	104-7	TANK I	THE REAL PROPERTY.	BILL	[13:40. I	1900			NL
m & p-Xylene	(EDV	120	10.4			5600		51	NL
o-Xylene	17.0	NA.		E-5	W. C.	660			NL
Isopropylbenzene	587.0	12500	120,0	100	E-10.4	240		63	NL
n-Propylbenzene				3113	98	680		170	NL
1,3,5-Trimethylbenzene	DETAIL .	Call Co.		THIS S.		1300	1000	75	NL
1,2,4-Trimethylbenzene	15.0 - 5	H.L.	185.0		D430	3100		S IN LAND	NL
sec-Butylbenzene	1507		E.50	IIII.	Market I	210		nd oilli	NL
n-Butylbenzene					54	430			NL
Naphthalene		-Distabili	12100 Hill	7		910		MARKET IN	5860
Methylene chloride	HI MOUTH		E N 11=0	Emena I	mus nga	200 00201	THE REAL PROPERTY.	2011/1	960
1,1 dichloroethylene	COR	Timo timo	Didiction to	of avenue in	omt/mil.	deministr	TOTAL SEC	1.00	64
1,2 dichloroethane								and Francy	10160
Trichloroethylene		alle	San Hara		Therefore	THE SHIP	market and	Inthiana	3370
Tetrachloroethylene		(Majolani)	di monin	intone (CE	15 ab 17	Vis. pro Tri		Street	350
Semi-volatiles, ug/L									
Phenol								25	NL
Naphthalene						1000			5860
2-Methylnaphthalene				23	180	1300		22	NL
Fluorene					160				NL
Phenanthrene					420				NL
Bis(2-ethylhexyl)phthalate							.T		1030
Fluoranthene									690
Metals, mg/L						/			
Chromium	0.0093	0.087	0.069	0.020	0.26	0.10	0.0092	0.038	0.282
Copper		0.014	0.0099		0.015	0.012	0.0083		0.17
Lead	3				0.082	0.032	0.032		0.224
Nickel		0.060	0.048		0.14	0.060			0.39
Zinc	0.030	0.079	0.073	0.031	0.086	0.090	0.089	0.027	5.5
Cadmium									0.14
Mercury									0.003
Silver									0.05
Thallium						3			4.3





Results from 1995 groundwater sampling event (continued)



ID number	CE-101	CE-103	CE-104	CE-106	MW-1	MW-5	MW-26	MW-29	East
		T AVID	1301-67	FOIL TO	DOM:	NOT BOT			Chicago
				31	7.001	9.51		III III (6)	San.
			1 11		011	10.50	Toll		District
	1				gired	10/63			Limits1
Others					No. 3	0	1		Tan Pr
Alkalinity, mg/L	632	167	506	718	1,020	1,030	690	437	NL
Ammonia-N, mg/L	4.6	0.26	7.0	10.9	9.6	5.3	3.7	8.4	77
Chloride, mg/L	30.9	28.5	560	54.1	20.8	50.7	11.1	9.7	NL
Total cyanide, mg/L					0.016		0.032		0.407
Fluoride, mg/L	0.19	0.71	0.13	0.23	0.53	0.43	0.63	2.9	2.9
Oil & grease, mg/L	5.8			3.9	371	72.9	36.9	7.1	50
pH	7.3	8.5	7.3	7.3	6.7	6.7	7.2	7.1	NL
Phenolics, mg/L	0.030	0.043		0.035	0.021	0.13	-	0.58	14
Sulfate, mg/L	11.0	256	488		323		140	34.1	NL
Total dissolved solids, mg/L	734	550	2,270	762	1,530	1,130	1,100	544	NL
Total phosphorus, mg/L	0.22	0.16	1.3	0.34	1.1	5.2	0.24	0.053	5.5
Total suspended solids, mg/L	53.5	280	391	94.2	231	146	88.7	4.6	NL

Note 1: ECSD has applied to IDEM for a renewal of their permit. Based on a telephone conversation with Ms. Nickie Geros on 1/24/00, these are the current pretreatment limitations until IDEM responds to the renewal. Note 2: NL means no pretreatment limitations have been established on ECSD. General Notes

- a. Concentrations below the detection limit are shown as blank cells.
- b. Concentrations in italics are above the ECSD pretreatment limitations.









